

an etch bath having a bubble plate, the etch bath being connected to the first tank and receiving the first etchant, the etch bath containing a residual etchant including a diluted etchant and residue material after the glass substrate is etched with the first etchant to reduce a thickness of the glass substrate;

a second tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material;

a connecting passage connecting the first and second tanks for transferring the separated diluted etchant from the second tank to the first tank; and

an outlet pipe attached to the second tank for discharging the residue material.

2. (Amended) The etching apparatus according to claim 1, wherein the etch bath includes a temperature sensor for sensing a target temperature to stop etching the glass substrate.

5. (Amended) The etching apparatus according to claim 4, wherein the first tank includes a first amount of the first etchant of a [predetermined] concentration from the etching solution, a second amount of the water, and a third amount of the diluted etchant.

9. (Amended) The etching apparatus according to claim 1, wherein the outlet pipe is connected to a bottom of the second tank, and the [bottom] bottom portion of the second tank has a cone shape.

10. (Amended) An etching apparatus for etching a glass substrate with an etchant, comprising:

an etch bath adapted to receive the substrate into the etchant for etching the glass

substrate;

a temperature sensor installed in the etch bath for monitoring a temperature of the etchant while the glass substrate is etched in the etch bath; and

a control unit for receiving a signal indicating the temperature of the etchant from the temperature sensor and transmitting an etching termination signal to the etch bath when the temperature reaches a [predetermined] target temperature.

11. (Amended) An etching apparatus for etching a glass substrate comprising:

a first tank including a first etchant;

an etch bath having a bubble plate, the etch bath being connected to the first tank for receiving the first etchant and adapted to etch the glass substrate with the first etchant, the etch both producing a residual etchant including a diluted etchant and residue material as a result of etching the substrate;

a separation tank adapted to receive the residual etchant from the etch bath for separating the diluted etchant from the residue material, the separation tank transferring the separated diluted etchant to the first tank;

a rinse bath for cleaning the glass substrate that is etched in the etch bath;

a dry bath for drying the glass substrate that is rinsed at the rinse bath;

a solvent supply source for supplying solvent water to the first tank;

an etching solution source for supplying an etching solution to the first tank; and

a control unit for controlling the etch bath, the rinse bath, the dry bath, the first tank, and the separation tank.

13. (Amended) The etching apparatus according to claim 11, further comprising a

temperature sensor installed in the etch bath for monitoring a temperature of the first etchant while the substrate is etched in the etch bath, wherein the control unit receives signals indicating the temperature of the etchant from the temperature sensor and transmitting an etching termination signal to the etch bath when the temperature reaches a [predetermined] target temperature to terminate the etching of the substrate.

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14. (Amended) The etching apparatus according to claim 13, wherein the control unit receives signals indicating the temperature of the etchant at start of etching the glass substrate in the etch bath and processes the signals to derive the [predetermined] target temperature of the etchant.

15. (Amended) The etching apparatus according to claim 11, wherein the first tank contains the first etchant [of a predetermined concentration] from a mixture of the etching solution, the solvent water, and the diluted etchant.

Please add new claims 19 and 20 as follows:

--19. The etching apparatus according to claim 1, wherein the bubble plate is located at a bottom portion of the etch bath and produces nitrogen bubbles.

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20. The etching apparatus according to claim 10, wherein the etch bath includes a bubble plate producing nitrogen bubbles from a bottom portion of the etch bath.--

REMARKS